



The British Chamber of Commerce in Hong Kong

Response to The Council for Sustainable Development Public Engagement on Long-term Decarbonisation Strategy

Introduction

The Council for Sustainable Development has launched a public engagement exercise to seek the views of the community in setting out a path for Hong Kong to decarbonise its economy in line with the Paris Agreement. The British Chamber of Commerce in Hong Kong welcomes this exercise and is pleased to share its views as one of the largest international business organisations in Hong Kong. We also highlight the experience so far of the United Kingdom, which has been taking a leadership position in tackling climate change.

In this response, we comment specifically on the largest sources of emissions in Hong Kong and also on the importance of individuals and businesses adopting a lower carbon lifestyle to help with emissions which may not be recorded in Hong Kong's own Greenhouse Gas (GHG) inventory but which nonetheless create carbon in the earth's atmosphere. Given the more than 460 member organisations that are part of the Chamber, we have not completed the Questionnaire enclosed with the public engagement document. Our views on the open ended questions are included below but at the end of this submission, we also provide a response to the 3 multiple choice questions.

Carbon Emissions in Hong Kong

The latest GHG inventory for Hong Kong covers the period from 1990 to 2017 and shows that around 65% of emissions were from electricity generation, 18% from transport, and 7% from waste. We consider each of these sectors below, together with the importance of improving the energy efficiency of buildings.

Electricity Generation

Electricity generation accounted for around 65% of Hong Kong's GHG emissions in 2017. Decarbonising the fuel mix is a key factor in reducing carbon emissions. Renewable Energy (RE) generated locally and Nuclear are both zero carbon sources of power while coal and gas emit carbon, in a roughly 2:1 ratio. The Chamber supports government's policy of gradually reducing the use of coal in favour of more gas and non-fossil fuel generation. Gas will represent around 50% of Hong Kong's fuel mix by 2020, with non-fossil fuel generation representing another quarter.

Before considering options for further decarbonisation, it is important to recognise the most important issue in the supply of electricity is the reliability of that supply – especially critical in a high rise densely populated urban environment like Hong Kong. This is only likely to become more so as we become a 'Smarter City' in the future, with further electrification and large parts of economy becoming digitalised. Any policy to change the fuel mix must be undertaken in such a way that it does not put Hong Kong's world-class reliability at risk.

Going forward, to enable a deeper decarbonisation the regular generation of electricity from coal will have to be phased out in the longer-term and, since natural gas still emits carbon, consideration should be given to whether all or some of it should in turn be replaced by zero carbon energy by 2050.

If there are significant technological breakthroughs in the commercial and technical deployment of carbon-capture and storage technologies, or if zero carbon hydrogen can be liquefied, imported and used in Hong Kong, then it is possible that local generation in 2050 could be reclassified as 'carbon-free'. This, however, is highly uncertain and may come at a considerable cost.



We therefore suggest that, in the shorter term, every effort is made to pursue practicable opportunities for RE development locally with appropriate government policy support; and also that government should support Waste-to-Energy projects. There are additional benefits with the development of viable local RE generation projects, including the strengthening of skills in the electricity supply and energy sectors with additional employment opportunities for Hong Kong engineers and in allowing our city to be more self-sufficient in the supply of renewable energy.

However with today's technology, local resources for the production of RE to meet our needs are limited. While these opportunities should be pursued, as noted above, to obtain additional supplies of zero carbon energy in real volume, regional cooperation will be needed.

That will mean the development of interconnection to the Mainland and the import of nuclear or RE into Hong Kong. This is likely to take some time as building major new cross-boundary infrastructure will have a number of challenges that will need government and community support on both sides of the boundary, as well as significant construction effort for perhaps up to 10 years. If this were to be in place, however, options open up for both CLP Power and Hongkong Electric to import zero carbon power to further decarbonise their fuel mix.

The way in which this would be done is critical. RE is intermittent in nature, so could not be guaranteed to be generating at the time when Hong Kong sees peak electricity demand. At present, the only cost-effective utility scale storage for large quantities of RE is pumped storage. Such sites are limited in Guangdong and not available in Hong Kong. Individual RE generators are located at a range of locations and are also subject to the reliability of the local grid to collect the power and then ultimately to transfer it to Hong Kong. On the other hand, another source of zero carbon energy likely to grow in availability in the coming years is nuclear power, something that Hong Kong has imported safely and reliably for more than 20 years. Today, it makes up around 25% of the overall electricity supply. It has the advantage of not being dependent on the weather and, for Daya Bay at least, of being directly connected to the Hong Kong grid.

Based on what we know today, the Chamber would welcome regional cooperation in the longer term to allow Hong Kong to access additional supplies of zero carbon energy for the whole of our city. This needs to be done in a way that:

- can be achieved while maintaining our world-class reliability, perhaps with a mixture of RE and nuclear power;
- allows the interconnection to be built to Hong Kong standards and operated by the two power companies;
- the power companies can contract for directly with zero carbon generators, so they can be certain of the exact energy source, rather than taking a 'grid mix' of power sources;
- they can seek reasonable prices by approaching a range of generators with the opportunity to negotiate for price and availability.

Energy Efficiency and Fuel Use in Buildings

As electricity generation accounts for around 65% of GHG emissions and buildings account for 90% of electricity use, if we can make our buildings more energy efficient and encourage householders and businesses to adopt a greater level of energy conservation by changing their behaviour that will also substantially reduce emissions.

We support the measures included in government's Energy Saving Plan for Hong Kong's Built Environment up to 2025 but believe these policy standards (for both end-use appliances and the buildings themselves) should be progressively tightened thereafter, including for new buildings the adoption of higher OTTV standards, increasing the flexibility in design and construction parameters to



support a lower carbon content and more natural cooling features (e.g. ventilation, shading, green rooftops etc.). Government should also explore increasing the requirement for obtaining the 10% GFA concession to a minimum Gold BEAM Plus rating. On site fossil fuel use, with the exception of Biodiesel from local sustainable resources, during construction should also be reduced through mandatory electrification, starting with Day 1 mobilisation of all government projects.

Hong Kong has made positive inroads into promoting the construction and renovation of more sustainable and energy efficient buildings. But a lot more could be done, particularly for our existing building stock. We would advocate Government leading the way by adopting an operational building performance rating scheme for all Government buildings, with the intention that the Hong Kong Green Building Society develop a scheme for all buildings in time. This would measure the actual impact of energy efficiency, rather than just intent, and could also present a comparative tool. The National Australian Built Environment Rating System (NABERS), which is also being trialed in the UK, would be a good reference. More encouragement, either through progressive regulation or government financial incentives should be provided to improve the energy efficiency of existing building stock, be it through better insulation, the retrofit of building services or the installation of more energy meters to help larger tenants better understand their own consumption.

Although electricity is the most important energy source used in buildings, around 70% of local gas sales are to non-transport applications and it is likely that most of this is used in buildings. The Hong Kong GHG inventory shows 6% of local emissions are from non-electricity/non-transport end-use of fuel and more than 4% is from industrial processes and product use, so for a deep decarbonisation, reductions here are also essential. It will be important to measure and improve the efficiency with which these fuels are used and that of other commodities (e.g. water), as well as reduce the waste created by the building. Currently, the Building Energy Efficiency Ordinance stipulates that energy audits must be carried out every 10 years, although the energy saving projects identified in these audits do not have to be implemented. Government should put in place incentives to see the best opportunities actioned and in the longer term consider applying minimum performance standards for the commercial equipment installed within commercial buildings, such as chiller units, lifts, escalators, lighting, water heating boilers and so on.

Transportation

The transportation sector represents close to 20% of Hong Kong's carbon emissions. It is also responsible for a very large proportion of air emissions in our city, including roadside emissions which have a potentially significant impact on human health. Decarbonising transport provides the opportunity to tackle both issues at once if done in the right way.

Experience overseas suggests that this sector is hard to decarbonise without direct policy measures implemented by government. So while we support the existing approaches of railway as a backbone, improved cycling, mobility and walkability and changes to the planning rules to facilitate this, we suggest the following additional measures be actively considered.

For larger vehicles, technology options are not yet fully mature. Shenzhen already operates thousands of electric buses today but in Hong Kong there are few. Government should support the bus companies to fund pilot charging networks at scale and the larger scale introduction of new models. We do not believe that the HK \$300m Pilot Green Transport Fund, established more than 8 years ago but with around 50% of the budget so far unspent, is doing enough to support the major initiatives necessary. Before wider electrification is available, HGV and buses could be running on a percentage of biofuel produced from local sustainable sources with pricing to incentivise uptake.

Greater support for the introduction of new energy vehicles. For private cars and light vehicles, the focus should be on facilitating the quicker introduction of electric vehicles. This segment is addressable now with existing technology. Given the efficiency of the electric motor compared to the internal



combustion engine, they are already more carbon efficient than the best fossil fuel versions, an advantage that will only increase as the carbon intensity of the city's electricity reduces with the switch to natural gas.

Government should conduct a formal consultation of the industry, stakeholders and the wider community next year to consider the potential for, and the implications of, banning new ICE vehicles in this category from the mid-2030s onwards (as other cities have done) with; enhanced tax benefits for private individual and corporate charging points and purchase; FRT and other tax incentives linked to vehicles' carbon footprint; as well as reduced red-tape for new technology options (e.g. self-driving vehicles to improve utilisation) and new business models (e.g. Uber/car sharing). Other policy measures e.g. ERP or controls on the number of new private vehicles (e.g. Singapore – but with an exception for electric vehicles) could be considered.

Other transport sectors should also be supported to decarbonise – the airport has already shown what can be done with its own transport and airside servicing fleet. For marine, shore-to-ship power should be provided in our ports (as with Long Beach in California) and for short trip ferries, electric trials should be undertaken. In the shorter term, LNG bunkering for local ships would offer lower carbon emissions than the continued use of diesel and this should be an option now that Hong Kong is getting its own LNG terminal.

Waste Reduction

Waste accounts for around 7% of GHG emissions in Hong Kong. We believe that significant effort needs to be made in three main areas to reduce this. As an immediate priority, effort needs to be made to capture and use the GHG emissions from landfill sites and we understand that Hong Kong utilities are now helping to do this. Secondly, waste has the potential for energy generation and so government should look to extend the initial projects undertaken to support waste-to-energy generation, since this can help to replace conventional generation, which may be from fossil fuels. This includes MSW incineration, sludge treatment (including the use of Biogas) and organic waste treatment.

Apart from the above, significant steps need to be made to reduce the generation of waste, with the establishment of a financially viable recycling ecosystem within a more circular economy in Hong Kong where untreated waste is looked on as a resource. Land, financial support and a regulatory framework including the establishment of a cross-border database where companies can list their major waste streams and available quantities are required to enable success. Much more in the way of public education and the provision of adequate and easy-to-use disposal facilities in both commercial and residential buildings enabling easy to use sorting and recycling (without affecting the GFA calculation) needs to be quickly put in place. PRS and other schemes should be extended to reduce waste, with the creation of a Waste Authority to manage these issues holistically.

A Greener Hong Kong

It is interesting to note that in 2017, Agriculture, Forestry and other land use only represented 0.1% of GHG emissions in Hong Kong in 2017. While this may seem a 'good' performance, many countries have turned this figure to a negative – with the capture of carbon through afforestation and greening measures. Hong Kong should look to plant more trees on open slopes in our country parks and add more carbon absorption through urban planting, green rooftops and other measures. These will improve aesthetic appeal as well as play a functional role as carbon sinks. More urban planting should also help to reduce temperature in built-up areas, something that Milan, Melbourne and Chengdu are all doing.

Setting a Target for Hong Kong

We suggest that Hong Kong moves from a GDP based carbon intensity target (like those we have for 2020 and 2030) to an absolute carbon emissions reduction target. Three options are put forward in the Council's engagement document, with a minimum level to support limiting global temperature rise to



2°C, in line the Paris Agreement. The Council has suggested¹ that this would need changes in lifestyle, 80% zero carbon energy with close cooperation with the Mainland and improvements in energy efficiency, lower carbon products, more green transport and technological advancements. Our view is that this is the minimum level of achievement necessary.

We would like to see a higher level of achievement, but have concerns on setting a very ambitious net zero target for 2050, now. As the Council notes, this would require mandatory changes to lifestyles and rigorous (but as yet unknown) technological breakthroughs and achievements underpinned by large scale electrification, together with 100% zero carbon energy, which in terms of today's technologies can only be provided by almost all electricity being imported from the Mainland. In current circumstances, getting backing from the community for these changes is likely to be very difficult.

Whilst we believe that although a much higher target may be seen as desirable, it may be difficult to get the community to buy-in now to this approach, with all that means for changes in lifestyle. We therefore suggest that as the Paris Agreement necessitates 5 year reviews, the initial 2°C target is considered for tightening in the mid-2020s when newer technologies may become more certain and society as a whole has already committed to a basic goal.

Lower Carbon Lifestyles and Business Decisions

Although we have focussed our response on specific suggestions for electricity generation, buildings, transport and waste, we should not lose sight of the importance of continued public education programmes to encourage everyone in the community to live a much lower carbon lifestyle. This is especially important in the light of the fact that Hong Kong's GHG inventory only counts terrestrial emissions within the border of the SAR. Based on this inventory, the public engagement document² shows Hong Kong's per capita GHG emissions midway in the range of world cities. However, as a highly urbanised international trading city, with few indigenous local resources, our actual carbon footprint for purchasing decisions made here is likely to be very much higher, if Scope 3 emissions for imported goods and air/marine transport journeys initiated in Hong Kong are included. We must therefore seek to influence people to make low-carbon purchasing decisions, at home or in business, if we are to reduce emissions overall, since GHG emissions do not respect national or local boundaries. A public education campaign to clearly and simply outline these issues, setting out clear options for rational choices should be introduced. It will be important to ensure that we quote practicable implementation examples for Hong Kong. In the longer term, education may not be enough and regulatory or other policy measures may need to be considered.

The UK Experience

The UK already has considerable experience in decarbonisation, having first adopted in 2008 a legally binding 2050 target to reduce emissions by 80% over 1990 as a base year. Since that time, considerable achievements have been made in decarbonising power generation, primarily by phasing down coal and increasing gas and renewable energy. A lower carbon power supply, together with energy efficiency improvements across a number of sectors and a shift to less energy-intensive industry within the economy, have reduced the UK's emissions by 43% from the 1990 level as at 2017.

Outlined in the attached Annex are further details of the strategies, case studies and policy approaches adopted in the UK which may be of use in Hong Kong's planning approach.

¹ https://www.susdev.org.hk/download/pe_document_e.pdf – page 20.



Questionnaire

The Chamber has provided its responses above to the open questions in the public engagement document. To be clear on the three specific multiple choice questions, our responses are as follows:

- Question 1
 - Do we support phasing out the use of fossil fuels?
 - Answer – Yes, across all sectors of the economy
- Question 2
 - How would we rank the attributes in setting the long-term fuel mix for Hong Kong?
 - Answer – 1st Reliability; 2nd Security and availability; 3rd Environmental Performance/Climate Change; 4th Affordability, although within reason.
- Question 3
 - Do we support the measures for a deep decarbonisation and of those listed which do we see as the most important to support benefit decarbonisation?
 - Answer – Yes. As the generation of electricity currently represents around 2/3rd of Hong Kong's carbon emissions, the single most important factor would be increasing the proportion of zero carbon energy in the fuel mix. Regional cooperation is supported, as long as reliable and secure supplies of this can be obtained by the power companies.

Summary and Conclusion

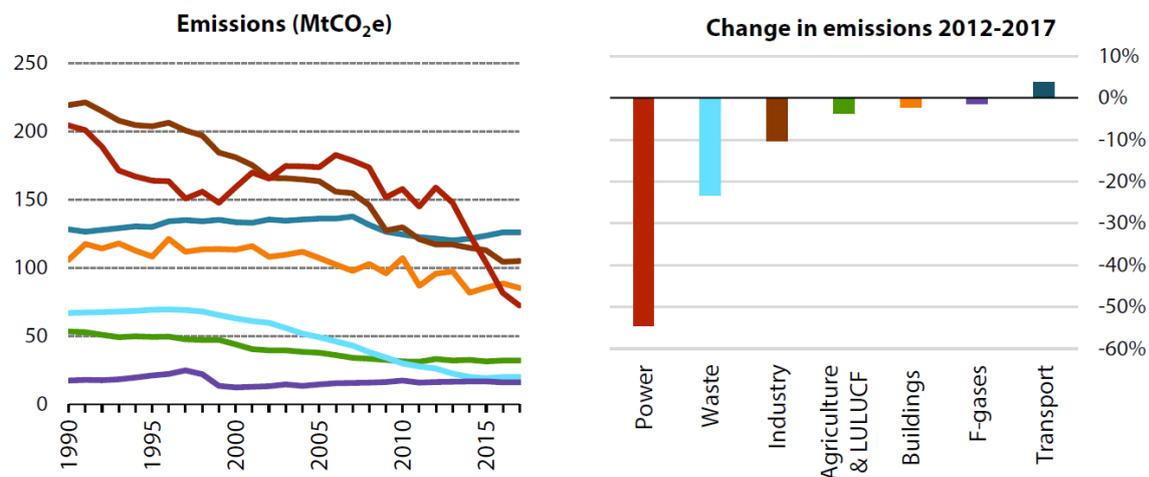
- The Chamber supports the Council for Sustainable Development's public engagement exercise. Carbon emissions are a critical factor in global warming and all countries have to reduce their emissions if we are to avoid the worst consequences. Hong Kong needs to take up its share of the reductions that are necessary.
- Electricity generation is an important sector and the Chamber supports its sure and steady decarbonisation. This must be done in a way that does not put at risk our world-class supply reliability, which enables our city's 24/7 lifestyle and the successful operation of the business sector. Increasing the proportion of natural gas and non-fossil fuels in the mix is a sensible way forward, together with the phasing out of coal. In parallel, the Chamber suggests Government strongly supporting development of viable local RE generation projects.
- At the same time, the energy efficiency of buildings will need significant improvement, with all fossil fuels used directly within them either decarbonising or being phased out in favour of lower carbon solutions.
- The transportation sector will be difficult to decarbonise, but we have to start soon with a clear and coherent set of policy measures to be introduced by government to quickly start the transition.
- Carbon reduction will affect us all in Hong Kong – how we use energy, how we travel, our lifestyles at home and work, what waste we create and what we eat. Making choices will be difficult and sustained public education will be key. The cost implications also need community buy-in. All sectors of the economy will have to do their part and government must take the lead.



Appendix – The UK Experience

In 2008, the share of zero carbon sources (including nuclear, bioenergy, hydro, wind and solar) in electricity generation was only 20%. With a quadrupling of renewable generation using the high level of natural resources the UK enjoys, that share has grown to around 50%, and is set to rise further. Behind this impressive growth however, the UK power sector has been battling with the increasing risk to supply reliability and rising energy costs, due to the closure of baseload fossil fuel generating plants, the higher penetration of intermittent renewable energy and the increasing use of more expensive peaking plants and other measures necessary for stabilising the electricity supply. The challenges for the power sector will continue as more and more intermittent renewable energy is integrated in the power system, and as more reliable fossil fuel baseload plants are retired.

While UK has made good progress, it may not yet be on track to meet the ambitious targets recently set for 2050 of net zero emissions, given there has been little reduction in other carbon emitting sectors. In general, electricity generation is a highly regulated sector of the economy, like in Hong Kong, involving relatively few commercial players. Other sectors, such as transport, have many thousands of stakeholders and so present greater challenges for emissions reduction. The UK's emission reduction targets will only be achieved if effective policy control extends beyond waste and power into sectors that have not so far achieved significant reductions. As the charts below show, broader changes in the UK economy (e.g. away from carbon intensive manufacturing) waste and power generation have made all the difference, with little progress from other sectors. Transport is now the largest emitting sector in the UK, accounting for 28% of UK GHG emissions in 2017.



GHG Emission Reduction in Different UK Sectors

Source: BEIS (2018) 2017 UK Greenhouse Gas Emissions, Provisional Figures; BEIS (2018) 2016 UK Greenhouse Gas Emissions, Final Figures

The achievement of the UK's long-term decarbonisation goal now rests on making significant new commitments on a large scale. Some of the key strategies in the decarbonisation pathway highlighted by the UK government are:

- Phasing out the sale of new conventional petrol and diesel cars and vans
- Significantly upgrading home and business energy efficiency
- Increasing non-fossil fuel energy including renewables and nuclear, and completely phasing out coal fired power generation



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- Deploying new technologies such as carbon capture use and storage (CCUS) for residual fossil fuel power plants and industrial facilities³
- Electrifying heat in buildings using heat pump technology. Indeed, the UK's Chancellor of the Exchequer (Finance Minister) has recently recommended banning gas boilers for heating and hot water in all new homes from 2025 to accelerate the switch to electricity
- Over the longer term, reducing the remaining end-use applications for natural gas in homes and businesses and replacing it with renewable hydrogen or bioenergy.

Some of the relevant technologies (e.g. CCUS, renewable hydrogen, etc.) are very much still in infancy and the implementation is uncertain in terms of technology maturity, cost and stakeholder acceptance.

³ https://www.susdev.org.hk/download/pe_document_e.pdf – page 18.